



UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/443,443	11/22/99	POZDER	SC10861TP

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HARRY A WOLIN
MOTOROLA INC
AUSTIN INTELLECTUAL PROPERTY LAW SEC
7700 WEST PARKER LANE MD TX32 FL02
AUSTIN TX 78729

EXAMINER

ABBOTT, B

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 08/02/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/443,443

Applicant(s)

Pozder et al.

Examiner

Barbara Elizabeth Abbott

Group Art Unit

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- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

- ☒ Claim(s) 1-23 is/are pending in the application.
- Of the above, claim(s) 12-23 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-11 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Applicant's election with traverse of claims 1-11 in Paper No. 4 is acknowledged. The traversal is on the ground(s) that the examination of claims 1-23, method and device, would not be a burden on the examiner. This is not found persuasive because method and device have separate classifications. The examiner is not required to search both the method class (438) and the device class (257) when claims are drawn to one or the other.

The requirement is still deemed proper and is therefore made FINAL.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "mostly" in claim 2 is a relative term which renders the claim indefinite. The term "mostly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. If the applicant intends a particular atomic weight % in the conductive bond pad then it must be clearly recited. The term "low yield strength" in claim 7 is a relative term which renders the claim indefinite. The term "low yield strength" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and

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one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. If the applicant intends a particular yield strength or material it must be clearly recited.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 4, 5, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Freeman, Jr. et al. (5,149,674).

Freeman, Jr. et al. disclose a method for forming a semiconductor device comprising forming a conductive bond pad (13/18) which can be made of copper having dielectric studs (14) formed therein over a semiconductor substrate (11) ; forming a dielectric layer (19) which can be made of a material selected from a group consisting of a nitride over (13/18); removing portions of (19); wherein removing portions of (19) forms a plurality of support structures that overlie (13/18) and are interconnected with unremoved portions of (19), and wherein at least a portion of a support structure overlies a portion of a dielectric stud, and wherein removing portions of (19) exposes a portion of (13/18); and forming a conductive capping layer (27) which can include aluminum overlying the plurality of support structure, wherein (27) electrically contacts a portion of (13/18). (Col. 3, line 19- Col. 5, line 14).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman, Jr. et al. as applied to claims 1, 2, 3, 4, 5, and 10 above and further in view of Takiar et al. (4,723,197).

Freeman, Jr. et al. disclose that (13/18) is formed over a layer of silicon dioxide or any suitable dielectric. Freeman, Jr. et al. do not specifically disclose a dielectric layer having a Young's modulus less than approximately 50 Giga Pascals or having a low yield strength. Takiar et al. teach a method of forming a conductive bond pad including forming the bond pad over dielectric layers including silicon nitride, silicon oxynitride, polyimide, silicon nitride, and silicon dioxide. These materials are considered preferred materials in the instant application. (Col. 2, line 53- Col. 3, line 34). It would have been within the scope of one with ordinary skill in the art at the time of the invention to use the materials of Takiar et al. for their disclosed intended purpose in the process of Freeman, Jr. et al. to form the dielectric layer upon which the conductive bond pad is formed.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman, Jr. et al. as applied to claims 1, 2, 3, 4, 5, and 10 above, and further in view of White (5,942,448).

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Freeman, Jr. et al. do not disclose forming a barrier layer which includes a material selected from the group consisting of tantalum, titanium, tungsten, and chromium between the capping layer (27) and the conductive bond pad (13/18). White teaches forming a conductive bond pad (22) with a capping layer (26) with a barrier layer (24) disposed therebetween. (24) is made of titanium-tungsten. It would have been within the scope of one with ordinary skill in the art at the time of the invention to employ the process of White for its disclosed intended purpose and the material of White for its disclosed intended purpose in the step of forming the conductive bond pad of Freeman, Jr. et al.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman, Jr. et al. as applied to claims 1, 2, 3, 4, 5, and 10 above, and further in view of Hwang et al. (5,912,510).


Freeman, Jr. et al. do not disclose forming the conductive capping layer (27) from a material selected from the group consisting of nickel and palladium. Hwang et al. teach the suitability of using nickel to form a capping layer over a bond pad. (Col. 3, lines 8-25 and Fig. 2). It would have been within the scope of one with ordinary skill in the art to use the material of Hwang et al. for its disclosed intended purpose to form the capping layer of Freeman, Jr. et al.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. **See MPEP 203.08.**

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Barbara Elizabeth Abbott whose telephone number is (703) 306-5866. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax number for this group is (703)308-7722(and 7724 and 7382). MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.


George Fourson
Primary Examiner
Art Unit 2823



B.E. Abbott
July 29, 2000